

REMARKS

Favorable reconsideration is respectfully requested in light of the following remarks, wherein Claim 1 has been amended. Currently, Claims 1-7 are pending in the present application.

As an initial matter, Claim 1 stands objected to containing a minor informality. Claim 1 has been amended to remove this informality. Accordingly, withdrawal of the objection to Claim 1 is respectfully requested.

Claims 1-6 stand rejected under 35 U.S.C §103(a) as being unpatentable over U.S. Patent No. 5,609,447 to *Britzke et al.* in view of U.S. Patent Publication No. 2002/0031409 to *Sato et al.* and further in view of JP 2000-015512 to *Kondo et al.* In addition, Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Britzke et al.* in view *Sato et al.* and JP 2000-015512, and further in view of U.S. Patent No. 6,585,460 to *Meece et al.*

The Examiner uses a new reference, i.e., JP 2000-015512, to reject Claims 1-6, in addition to the *Britzke et al.* and *Sato et al.* reference. However, the Examiner again fails to establish a *prima facie* case of obviousness.

In particular, *Britzke et al.* discloses a drill bit having a drill body with a cutting tip, wherein the primary or main cutting edges 20 are disposed along the cutting tip 14. The Examiner concedes that *Britzke et al.* does not disclose the feature of a milling cutter being an end mill having main cutting edges extending along an edge of the cutting grooves as well as being arranged substantially in a common plane. The Examiner seeks to rely upon *Sato et al.* for teaching, generally, an end mill and JP 2000-015512 for disclosing a sharp edge at the transition from the front end section. However, the Examiner has failed to provide the evidence as to why one having ordinary skill in the art would modify *Britzke et al.* to include

the feature that the transition from the front end section of each cutting groove forms a sharp cutting edge with the front end face of the cutting part.

To the contrary, one having ordinary skill in the art applying the invention of *Britzke et al.* to a milling tool, would clearly strive to provide the corresponding feature along the main cutting edges of a milling tool. That is, the rounded main cutting edges would be applied to the helically extending main cutting edges of the milling tool, but not to the minor cutting edges at the front end thereof. In contrast, independent Claim 1 recites that the main cutting edge includes a sharp cutting edge, which is not rounded.

Moreover, Applicants submit that the Examiner's interpretation of column 5, lines 53 to 59 of *Britzke et al.* is incorrect. *Britzke et al.* states the following:

"The modified cutting edges of the present invention could also be used on other types of rotating cutting tools. Furthermore, the process disclosed could additionally be used on other rotating cutting tools such as other types of drills, router bits and milling cutters...." (emphasis added).

The phrase "process disclosed" refers to surface decarburizing to increase the resistance to wear as referred to in the preceding paragraph in column 5. In as far as *Britzke et al.* refers to "cutting edges", one having ordinary skill in the art would understand this to be referring to the main cutting edges, which, for a drill, are the front end cutting edges. However, due to the fact that milling tools have their main cutting edges generally arranged on the circumference of the tool (in general on a cylindrical envelope surface), a skilled man would clearly understand that the modification should be made with the respective main cutting edges of a mill which are not the front end cutting edges but instead the cutting edges extending along a helical edge of the respective helical cutting grooves.

Britzke et al. addresses the reduction of wear of the main cutting edges, i.e., the cutting edges providing the major cutting or chipping work. As such, *Britzke et al.* does not teach that the drill could be used as a milling tool but only indicates that the features from the

(main) cutting edges of the drilling tool could also be applied to the cutting edges of a milling tool. In that case, one having ordinary skill in the art would clearly understand that the respective features have to be transferred to the main cutting edges of a milling tool which are the cutting edges running helically along an edge of the chip grooves.

With regard to JP 2000-015512 to *Kondo et al.*, the Examiner references figure 2 for allegedly showing the feature of a rounded transition to a sharp edge. However, this reference is not a disclosure of the shape and extension of the front end portion of the main cutting edges. To start, JP 2000-015512 refers to a drill and not to a mill. Moreover, it appears that, if figures 1 and 2 do show any edge, it is a cross section through the minor cutting edges of the respective drill, which is shown in bold lines in figure 3. Even if figure 2 is interpreted to show a cross section through a front end cutting edge, this is again the front end cutting edge of a drill and the transfer of such a feature to a milling tool would result in a corresponding cross section of the peripheral cutting edge of the present shank end mill and would then not comply with the present claim. Accordingly, the Examiner has failed to establish a *prima facie* case of obviousness.

For at least the foregoing reasons, it is submitted that the shank end mill of independent Claim 1, and the claims depending therefrom, are patentably distinguishable over the applied documents. Accordingly, withdrawal of the rejections of record and allowance of the present application is earnestly solicited.

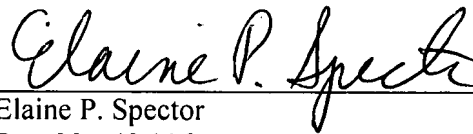
Should any questions arise in connection with this application, or should the Examiner believe a telephone conference would be helpful in resolving any remaining issues pertaining to this application, it is respectfully requested that the undersigned be contacted at the number indicated below.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0573. This paragraph is intended to be a CONSTRUCTIVE PETITION FOR EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully Submitted,

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